

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



REC'D 27 FEB 2006

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| Applicant's or agent's file reference PG0118/PCT | FOR FURTHER ACTION | See Form PCT/IPEA/416 |
| International application No. PCT/KR2004/002707 | International filing date(day/month/year) 22 OCTOBER 2004 (22.10.2004) | Priority date (day/month/year) 24 OCTOBER 2003 (24.10.2003) |
| International Patent Classification (IPC) or national classification and IPC B66C 1/06(2006.01)i | | |
| Applicant YE, Hae-Kum et al | | |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☐ (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
 - ☒ Box No. I Basis of the report
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Box No. VI Certain documents cited
 - ☐ Box No. VII Certain defects in the international application
 - ☐ Box No. VIII Certain observations on the international application

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| Date of submission of the demand 24 MAY 2005 (24.05.2005) | Date of completion of this report 10 FEBRUARY 2006 (10.02.2006) |
| Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140 | Authorized officer TAK, Hyeong Yeop Telephone No. 82-42-481-5408  |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/002707

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☒ This report is based on translations from the original language into the following language English which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☒ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the drawings:
- pages _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of of:
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/002707

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-------|-----|
| Novelty (N) | Claims | 1 - 6 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1 - 6 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1 - 6 | YES |
| | Claims | | NO |

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents.

D1 : JP 02-305797 A (SANMEI DENKI KK) 19 DECEMBER 1990
D2 : US 4,893,858 A (TOYOTA JIDOSHA KK) 16 JANUARY 1990
D3 : JP 08-324951 A (SMITOMO HEAVY IND LTD) 10 DECEMBER 1996
D4 : KR 2002-36825 A (HANCHANKI;KIMYOUNGHO;YEHA EKUM) 16 MAY 2002

The invention claimed in claim 1 is:

a lifting magnet comprising a housing; a rotary magnet unit rotatably accommodated in the housing and comprising a pair of permanent magnets having opposite magnetic poles and a rotational shaft; a stationary magnet unit comprising a pair of permanent magnets surrounding the rotary magnet unit and facing each other across the rotary magnet unit and determining a magnetization state and demagnetization state according to rotated positions of the rotary magnet unit, the lifting magnet further comprising:

a pinion coupled to the rotational shaft;

a socket moving up and down within a predetermined lifting stroke with respect to the housing;

a lifting slider comprising a toothed rack portion to be engaged with the pinion, moving up and down within the lifting stroke, and rotating the pinion to set the magnetization state at a top dead point and set the demagnetization state at a bottom dead point;

a locking part provided in one of the socket and the lifting slider;

a locking unit provided in the other of the socket and the lifting slider, comprising a locker to be locked to and released from the locking part, and lifting up and down both the socket and the lifting slider in the state that the locker is locked to the locking part; and a locking unit driver alternately driving the locking unit to release the locker from the locking part at a first lifting operation of the socket, and to lock the locker to the locking part at a second lifting operation of the socket.

1. Novelty

The subject-matter of claim 1-6 is considered to be novel over the available prior art.
See the section 2(inventive step) for details.

2. Inventive Step

a) Independent Claim 1

The invention claimed in the claim 1 relates to a lifting magnet.

The inventions disclosed in the D1-D4 relate to lifting magnet devices.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

BOX NO. V

Comparing the invention of claim 1 with those of D1-D4, the characterizing features of claim 1 is considered as this; only the socket is lifted(the lifting slider is not lifted) at a first lifting operation, however both the socket and the lifting slider are lifted together at a second lifting operation.

That is to say, only the socket is lifted up and the magnetic force is kept being turned off when the lifting magnet is lifted up from the initial state; both the socket and the lifting slider are lifted up and the magnetic force is set as the on state when the lifting magnet is lifted up again in the state that the lifting magnet is put on the steel material to be carried; both the socket and the lifting slider are lifted down and the magnetic force is set as the off state when the lifting magnet and the steel material together are lifted down.

Because none of D1-D4 teach or fairly suggest said characterizing features of the invention of claim 1, the invention claimed in claim 1 is considered to involve an inventive step.

b) Dependent Claim 2-6

The subject matter of claims 2-6 is considered to involve an inventive step because the inventive step of independent claim 1 has been acknowledged.

3. Industrial Applicability

Claim 1-6, relating to a lifting magnet, are considered industrially applicable.